

Appendix 2:

```
ACTIVE_SPEECH_MODE_SET = (LOW_MODE, ..., HIGH_MODE)
NUMBER_OF_ACTIVE_SPEECH_MODES = n
LOW_MODE = ACTIVE_SPEECH_MODE_SET(1)
HIGH_MODE = ACTIVE_SPEECH_MODE_SET(n)
```

IF n is even

→ MIDDLE_MODE = ACTIVE_SPEECH_MODE_SET(n/2)

IF n is odd

→ MIDDLE_MODE = ACTIVE_SPEECH_MODE_SET((n+1)/2)

IF n is 2

→ MIDDLE_MODE = LOW_MODE

/* Used thresholds are adaptive based on background noise and speech power level */

LEVEL_FACTOR = *function*(speech level)

NOISE_FACTOR = *function*(noise level)

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LOW_GAIN_TRESHOLD = *function*(LEVEL_FACTOR, NOISE_FACTOR, fixed codebook gain, ACTIVE_SPEECH_MODE_SET)

HIGH_GAIN_TRESHOLD = *function*(LEVEL_FACTOR, NOISE_FACTOR, fixed codebook gain, ACTIVE_SPEECH_MODE_SET)

/* Source adaptation for active speech */

IF mode is not DTX_MODE

/*Low energy sequence*/

IF last fixed codebook gain is smaller than LOW_GAIN_TRESHOLD

→ mode is LOW_MODE

/*Transient*/

ELSE IF zero cross variation is NONSTATIONARY

→ mode is HIGH_MODE

/* Voiced with low frequencies*/

ELSE IF zero cross variation is STATIONARY & last zero cross is LOW

→ mode = MIDDLE_MODE

/*Voiced*/

ELSE IF (LOW < last zero cross < HIGH)

IF last fixed codebook gain is larger than HIGH_GAIN_TRESHOLD
mode = HIGH_MODE

ELSE

mode = MIDDLE_MODE

/* Unvoiced */

ELSE IF last zero cross is HIGH

→ mode = HIGH_MODE

/* Just code... */

ELSE

mode = MIDDLE_MODE